EVALUATING AGROFORESTRY WORKERS USAGE IN INFORMATION COMMUNICATION TECHOLOGIES IN EDO STATE, NIGERIA.

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ABSTRACT
The study focused on evaluating agroforestry workers' usage in information communication technologies in Edo State, Nigeria. Multistage sampling technique was used in selecting the 60 agroforestry workers and data were collected through structured questionnaire. The major ICT tools for accessing agricultural information by agroforestry worker were mobile phone, television, internet, radio and e-mail. Some of the major factors influencing the use of ICTs were ease of accessing information with the mean of 2.47, quality of content ($\bar{x}$ = 2.35), and relevant of information ($\bar{x}$ =2.30) in the area sample. Result of the findings shows that there is favorable perception towards the usage of ICTs in discharging duties among the agroforestry workers and major problem identify by the respondents were lack of confidence in operations of ICTs problems of erratic power supply, and lack of ICTs skills and inability to use. Correlation result shows that there is positive relationship between socio-economic characteristics of the respondents and their perception towards the use of ICT facilities in discharging their work. It is therefore recommended that better skill acquisition on the use of ICTs to be made available to agroforestry workers for maximum production and utilization, hence benefit highly from the potentials of ICTs for improved living standard of the workers.
Keywords: *Agroforestry Workers; Communication; Evaluate; Information; Technology.*

INTRODUCTION

Agroforestry as a system of farming which combines agriculture with forestry in a rational approach to enhance the maintenance of sustainable production systems on the same piece of land, either simultaneously or sequentially offers the best solution to soil infertility and land degradation problems (Fagbemi, 2002). The integration of trees into the farming system could go a long way to help ameliorate environmental problems as well as enhancing biodiversity conservation, specifically by creating microclimates favorable for crop growth, and enhancing the recycling of materials to provide a more complete ground cover which could help to protect the soil from erosion and moderate extreme temperatures (Adedire, 2004). Agroforestry is the intentional

mixing of trees and shrubs into crop and animal production systems to create environmental, economic, and social benefits (USDA, 2011).

Information is of essential significant in empowering farmers and agroforestry workers to improve their livelihood. This implies that essential information such as weather information, storage information, sowing, improving soils, on the lookout for the finest cost of produce, pest control all empower farmers and influences their decision-making process. However, the appropriateness of such information and its relevance to agroforestry workers specific field needs is an uphill task in the face of an increasing shortage of extension staff and other physical and policies related challenges bedeviling extension service delivery. As a result of these problems that are encountered by small-scale farmers, the emergence of Information and Communication Technology (ICT) becomes timely (World Bank, 2011). Nonetheless, farmers and agroforestry workers' ability to efficiently use these information communication technology platforms in accessing extension services remains very sacrosanct to maximizing the gains of this service delivery option.In agriculture, ICT tools are utilized to disseminate recent information and to enhance the usage of the existing ones. In many developing countries, different technologies are used for agricultural and economic development (Chhachhar et al., 2014). Kabir (2015) asserted that information and skills gap inhibit the adoption of new technologies by farmers and reduces their technical efficiency. This implies that improved productivity by farmers demands that farmers get relevant information at the right time. However, little success has been accomplished hence broad utilization of contemporary information technologies has to be encouraged and implemented as information is fundamental for encouraging agrarian, rustic advancement and bringing around social and financial changes (Oladele, 2015).Consequently, the integration of ICT in agriculture as embedded in the program has rapidly changed the way agricultural technologies are transferred. This therefore, resulted in a transformation in agricultural practices due to farmers improved access to timely and relevant information and sharing knowledge (Agha et al., 2018). Furthermore, the favourable attitude of farmers is required to achieve the benefits of ICT in extension

program planning (Raghuprasad et al., 2012). Information communication technology is becoming trail blazer in every aspect of economy globally because it enhances information exchange such that information transfer is done faster and cheaper than it has ever been. Several initiatives are springing up to introduce various information communication devices to facilitate agribusiness.

In general, the capacities of ICTs on food security are related to improving communication between research systems, farmers and extension, improving accessibility to information regarding inputs, introducing technologies, providing more rapid accessibility to high quality information, ensuring information about the appropriate times and places for optimized sales of agricultural products, increasing agricultural products and decreasing agricultural product losses (Temu and Msuya, 2004).

In Nigeria, small-scale farmers access to factors of productions such as credit and relevant information are very limited and these factors constraints market transaction as farmers are confined to sell their produce at prices below the market standard due to lack of adequate information. In Africa, the majority of small-scale farmers rely on mediators such as non-governmental organizations (NGOs), extension officers and producer organizations to acquire and share information on the invention in soil fertility, weather forecasting, pest management, irrigation and crop varieties among others. However, the potential of these ICT tools is under-utilized especially among the farming households. Danaan (2006) relates this to high level of illiteracy and lack of technical know-how among farming population. The low level of education and literacy among rural farmers in the developing countries including Nigeria had resulted into great scarcity of skills and expertise essential in exploring the potentials of ICT in promoting agricultural productivity and food security.

According to International Telecommunication Union (ITU) (2009), ICTs do not directly ensure household food security, but rather play an important role in uplifting the livelihood activities of the rural populace by keeping them abreast of up to date information which empowers their productive and logical decisions. It is on this background that the International Telecommunication Union (ITU) is working hard on promoting the use of ICT to address agricultural problems including food security. Without adequate knowledge and skills on the use of ICTs among the farming population, ICT will remain restricted to only the urban centers of the country while agricultural productivity will remain low leading to food insecurity. This gap therefore necessitated this study to evaluate agroforestry workers' usage in information communication technologies in Edo State, Nigeria. Specifically, the study described the socio-economic characteristics of agroforestry workers in the study area; identified

various ICT tools available for use by the respondents; determine the factors that influencing the use of ICT among the respondents determine the respondents' perception about the usage of ICT in discharging the duties in the study area and identify various problems associated with the usage if ICT in the study area.

The study hypotheses will be stated at null forms as:

H_o1: There is no significant relationship between agroforestry workers socio- economic characteristics and their perception towards the use of ICT in discharging their work.

MATERIAL AND METHODS
Study Area

The study was conducted in Edo State, which is one of the States in the Southern part of Nigeria. The State has 18 Local Government Areas with the capital in Benin City. The population of the State is about 4 million people consisting of three major ethnic groups namely Binis, Esans and Afemais (Edo State Gov., 2014). It has a landmass of 19,794 km square and it is geographically located between 05044lN to 07034lN latitudes 05041E to 060451E longitude. The state is bordered by Kogi state in the North, Delta state in the East and Ogun/Ondo state in the West. Edo state is in the rainforest zone with annual rainfall of 1,300mm – 2,300mm per annual. It has a landmass of $19,035km^2$. About 60% of this land is arable land (Edo ADP,2000). The National population census of 2006 put Edo state at 3,218,323 made up of 1,640,641 males and 1,577,871 females (NPC, 2006). Agriculture is the source of gainful employment and livelihood for over 60% of the state population. It is estimated that there are over 180,000 farm families with an average family size of 7 persons per household in this state. (Edo ADP, 2003).

Sampling Technique

At stage 1, from each of 3 senatorial zones in Edo state, 9 Blocks representing 9 local government areas were selected. At stage 2, from each zone, 3 Blocks were selected. From each block, 20 respondents were randomly selected. At stage 3, a purposive sampling technique was used to select one village area that had the highest participating agroforestry worker out of 3 participating villages in each local government area, from each block. At stage 4, a systematic random sampling technique was used to select sixty (60) respondents that were able surveyed and used for the analysis. Descriptive and inferential statistics such as frequency, percentages, mean Chi-square and Correlation were used to analyse the data.

RESULTS AND DISCUSSION
Socio-economic Characteristics of Agroforestry Workers.

Respondents' socio-economic characteristics are presented in Table 1. The mean age of the sampled respondents was 48.4 years with modal class between 41 and 55 years. This indicates that majority of the

respondents are still in their economically active years in the productive enterprises. Majority (81.7%) of the sampled respondents wasmales; Okoedo-Okojie (2015) posited that agriculture is dominated by men. While majority (71.7%) of the agroforestry workers were married as at the time of this study. This is supported by the study by Omotayo (2011) that indicates that most of the farmers are married, this can have a positive effect on productivity and welfare of the business as other family members such as wives and kids can serve as a source of labour. Furthermore, Chisasa (2014) states that people with families take farming seriously to generate extra income to look after their families. The mean household size of the sampled respondents was 7 with modal class between 5 and 8 members in a family. However, Ajani and Ashagidigh (2008) stated that the contribution of the

household to productivity could be based on personal view of interest. This is because an increase in household size would result in an increase in household expenditure which decreases the annual income of farmers. This implies that majority of the respondents had a large household size who could serves as a source of labour in time of need. Furthermore, the educational level revealed that 61.7% of the respondents had Bsc/B.A/HND certificate while 20.0% had MSc/M.A qualification. This implies that a sizeable number of the respondents were knowledgeable and literate to understand more about the issue of conflict in the area. The mean years of working experience of the respondents was 18.2years. About 45.0% of the sampled respondents were members of one social organization or the others in the study area.

Table 1: Distribution of respondents according to socio-economic characteristics

Variables	Mean	Modal class
Age	48.4	41 – 55years
Sex		81.7% Male
Marital status		71.7% Married
Religion		60.0% Religion
Educational level		61.7% & 20.0% Bsc/B.A/HND & MSc/M.A
Household size	7members	5 – 8members
Years of working experience	18.2years	71.7% 15 and above
Farm size	2.01hectare	2 – 4 hectares
Secondary occupation		50.0% Trading
Membership of social organization		45.0% members

Source: Field Survey, 2021

Result in Table 2 reveals respondents' selection of various ICT tools used in the study area this was based on multiple choices. The result therefore, indicates that the majorities of the respondents use mobile phone (90.0%), television (88.0%), internet (85.0%), radio (83.3%) and e-mail (75.0%) devices as their major ICT tools for accessing agricultural information for farm management in the study area. Furthermore, 66.7% of the respondents use their personal computer, while 56.7% uses DVD and CDS in the study area. Only a few of the respondents' used digital camera (48.3%), video conferences (36.6%), telecentres (26.7%) and bulletin (23.3%). This implies that most available ICT tools used by farmers are mobile phone, television, internet and radio for accessing information. The uses of conventional ICTs (radio, television and telephones) still remain the most available ICTs to agroforestry

workers in the study area. Nevertheless, Lashgarara et al (2010) reported that old ICT tools (radio, television and cell phones) are the major ICT facilities for acquiring information related to household food security dimensions among rural households in Iran. This is supported by the study by Ovwigho et al. (2009), which indicated that television was the major ICT used for information dissemination in extension service delivery to farmers in Nigeria, while radio was the most important ICT followed by television and video in Kenya. Similarly, studies by Farooq et al. (2007) show that in Pakistan the majority of respondents reported radio (75%) and television (80%) as most commonly used ICT tools for sourcing for information. Adejo and Haruna (2009) had earlier stated that old ICT tools are ideal for rural areas; it is cheap to set up, easy to use and filling vital needs.

Table 2: Various ICT tools available for use by the respondents

ICTs tools available	Frequency (n = 60)	Percentages (%)
Mobile phone	54	90.0
Radio	50	83.3
Television	53	88.4
Internet	51	85.0
E-mail	45	75.0

Telecentres	16	26.7
Bulletin	14	23.3
Digital camera	29	48.3
DVD and CDs	34	56.7
Personal Computer	40	66.7
Video Conferencing	22	36.6

Source: Field Survey, 2021

Factors Influencing the Use of ICTs Among Agroforestry Workers in the Study Area.

Result in Table 3 shows the findings of the analysis of some of the factors influencing the use of ICTs among agroforestry workers in the study area. Above half (56.7%) of the respondents always indicated that ease of access to information with the mean value of 2.47 as the major factor influencing the agroforestry workers' in the use of ICTs in the study area; this is followed by quality of content (50.0%) with the mean value of 2.35, while relevant of information (41.7%) with the mean value of 2.30 were always major factors influence the use of ICT in the study area. Furthermore, ease of communication and access to production and marker information were with the mean value of 2.23 respectively as another factor influences the use of ICT among the respondent sampled for this study. This indicate that agroforestry workers are meant to ensure that good and quality message on agricultural findings and necessary technologies are made available to improve the productivity of farmers and to facilitate the role extension in the areas plays important in national development. Bolarinwa and Oyeyinka (2011) stated that there will be quick exchange of agricultural information between the extension agents and farmers if ICTs components are integrated in delivery of agricultural information to farmers in Nigeria.

Table 3: Factors influencing the use of ICT among the respondents

Factors influencing	Always (%)	Occasionally (%)	Never (%)	Mean	Std.dev
Ease of access to information	34(56.7)	20(33.3)	6 (10)	2.47	0.676
Access to production and market information	24(40.0)	26(43.3)	10 (16.7)	2.23	0.722
Relevant content	25(41.7)	28(46.7)	10 (16.7)	2.30	0.671
Quality of information	30(50.0)	21(35.0)	9 (15.0)	2.35	0.732
Cost of obtaining information	20(33.3)	25(41.7)	15 (25.0)	2.08	0.766
Ease of communication	21(35.0)	32(53.3)	7 (11.7)	2.23	0.647
Availability of ICT tools	24(40.0)	22(36.7)	14 (23.3)	2.17	0.785

Source: Field Survey, 2021

Perception Aboutthe Usage of ICT in Discharging the Duties

Result in Table 4 shows perception of the agroforestry workers towards the usage ICT. Findings reveals that ICT tools can be misplaced or develop fault easily during usage with the mean value of (($\bar{x}$ =4.06), followed by ICT facilitate agricultural information dissemination among themselves (($\bar{x}$ =3.61), ICT tools is an expensive information dissemination medium (($\bar{x}$ =3.58), ICT tools can be used to transfer technical and economic agricultural information (($\bar{x}$ =3.56), agroforestry workers are well trained on the use of ICT tools (($\bar{x}$ =3.54), also, ICT tools exist in many rural areas for easy communication (($\bar{x}$ =3.45), while government policy exist concerning ICT usage for information dissemination to farmers and misinformation may occur in the use of ICT were with the mean (($\bar{x}$ =3.30) respectively in the study area. This is an indication that the integration of ICT tools in agriculture as entrenched in the program has rapidly changed the way agricultural technologies are transferred from one area to other. Agha et al., (2018) asserted the use of ICT as resulted in transformation of agricultural practices due to farmers improved access to timely and relevant information and sharing knowledge. This has help farmers to have good attitude towards ICT usage and accept any ICT developments in their communities for agricultural improvement. Lashgarara et al., (2010) reported that ICTs usage have the potential to improve the ability of individuals to acquire information needed for promoting agricultural activities and ensure food security in the country. Nigeria as well can benefit from this knowledge and information simply by acquiring existing knowledge, produce new knowledge and apply this knowledge to foster development especially in all area of agriculture. ICT tools and its usage could be used to meet the information needs of the local people by sharing the acquired knowledge and information.

Table 4: Respondents' perception about the usage of ICT in discharging the duties

Perception statement about ICT usage	Mean	Std. dev
Facilitate agricultural information dissemination among themselves	3.61	1.164
Reduces personal contact with farmers	3.14	1.338
Misinformation may occur in the use of ICT	3.30	1.216
Agroforestry workers are well trained on the use of ICT tools usage	3.54	1.169
Network problem will not limit usage of ICT	2.91	1.255
ICT tools can be used to transfer technical and economic agricultural information	3.56	1.221
Erratic power supply limit the usage of ICT usage	3.24	1.139
Information can be sent easily through SMS. MMS, Voice Message etc..	3.28	1.350
Government policy exist concerning ICT usage for information dissemination to farmers	3.30	1.247
Many agroforestry workers lack the usage of ICT tools	3.15	1.181
ICT tools exist in many rural areas for easy communication	3.45	1.135
ICT tools can be misplaced or develop fault easily during usage	4.06	1.215
ICT tools is an expensive information dissemination medium	3.58	1.281

Source: Field Survey, 2021

Problems Associated with the Usage of ICT in the Study Area.

Result in Table 5 show that out of the seventeen(17) possible problems listed in the study, ten (10) were considered to be serious problem to the use of ICTs in agriculture by agroforestry workers in the study area. These include lack of confidence in operating ICT facilities such as computers, CD Rom ($\bar{x}$=2.46), problem of erratic power supply ($\bar{x}$=2.42), lack of ICTs skills and inability to use ($\bar{x}$=2.33), cost of ICTs and its tools ($\bar{x}$=2.24) and poor communication network in rural area ($\bar{x}$=2.18). Other problems include; high cost of ICT software ($\bar{x}$=2.15), high cost of ICTs hardware ($\bar{x}$=2.10), fear of technology issues ($\bar{x}$=2.06), lack of adequate time for training ($\bar{x}$=2.04) and lack of infrastructural facilities ($\bar{x}$=2.00). It is generally agreed that ICTs access unevenly favour urban and wealthy residents you can afford it usage for their conveniently. Arokoyo (2003) had earlier observed that the adoption and utilization of ICTs in agriculture are constrained among other problems by inadequate infrastructure, limited human resource capacity, absence of national policies and low ICTs literacy.

Table 5: Problems associated with the usage if ICT in the study area.

Problem	Mean	Std. Deviation
Lack of infrastructural facilities	2.00	0.942
Irrelevant content of ICT message that do not meet the need of clients	1.88	0.931
Technical skill problem	1.86	0.863
Lack of interest in ICT	1.54	0.873
Literacy level	1.68	0.642
Lack of ICTs skills and inability to use	2.33	1.034
Poor communication network in rural area	2.18	0.997
Too hard to use	1.90	0.925
Lack of adequate time for training	2.04	0.984
Problem of erratic power supply	2.42	1.021
Fear of technology issues	2.06	0.934
Cost of ICTs and its tools	2.24	0.542
Lack of confidence in operating ICT facilities such as computers, CD Rom	2.46	1.432
Complexity in using ICT	1.96	0.432
High cost of ICT soft ware	2.15	0.762
High cost of ICT hard ware	2.10	0.874
General lack of awareness of the importance of ICT in agriculture	1.90	0.911

Source: Field Survey, 2021

H$_o$[1]: There is no significant relationship between agroforestry workers socio- economic characteristics and their perception towards the use of ICT in discharging their work.

The result of Pearson Product Moment Correlation (PPMC) analysis establishing positive relationship between socio-economic characteristics of the respondents and their perception towards the use of ICT facilities in discharging their work were as presented in Table 6. The result revealed that age (r= 0.675; p<0.05), income per annum (r=0.526; p<0.05), educational level (X=10.857; p<0.05), and years of working experience (r=0.246); p<0.05) all exhibited positive and significant relationship with the

perception toward the use of ICTs. This implies that all the selected variables considered had significant influence on the perception towards the utilization of ICTs among the agroforestry workers in the area. That is, as the agroforestry workers advances in their age, their perception towardsthe use of ICTs increases. This may be due to intrinsic characteristics such as innovative and decision process. This finding is in alliance with the claim of (Abdulwahab and Zulkahairi, 2012) that age is a significant variable, moderating effect on the relationship between the behavioral intentions towards user's acceptance of ICT. Also, as the income of the agroforestry workers

increases in the study area, the tendency to procure, manage and utilization of ICT facilities becomes high. There exist positive and significant relationship between educational level and use of ICTs. This implies that, the higher the educational level of the respondent, the more knowledgeable the agroforestry workers will be in the technicalities involved in the use of ICT tools. The positive and significant relationship of years of working experience with the use of ICTs, indicates that the higher the years of working experience of respondents, the more knowledge gained in the utilization of ICT facilities.

Table 6: There is no significant relationship between agroforestry workers socio- economic characteristics and their perception towards the use of ICT in discharging their work.

Variables	X –value	df	r-value	p-value	Decision
Sex	1.450	1		0.325	Not significant
Age			0.675	0.003	Significant
Marital status	3.293	3		0.063	Not significant
Religion	4.428	2		0.451	Not significant
Educational level	10.857	4		0.013	Significant
Household size			0.398	0.082	Not significant
Years of working experience			0.246	0.001	Significant
Secondary occupation	4.123	3		0.321	Not significant
Income level			0.526	0.021	Significant

Source: Field Survey, 2021

CONCLUSION

The study found out that aged with a good level of education and high interaction among agroforestry workers dominated ICT usage in the study area. The agroforestry workers indicated that mobile phones, television, internet facilities, radio and e-mail were the most utilized information and communication technologies (ICTs) in receiving and disseminating agricultural information in the study area. Major factors influencing the use of ICTs among the agroforestry workers were ease of access to information, quality of information and relevant content. The agroforestry workers has favorable attitude towards the usage of ICTs in the study area. The major problem to the respondents' full participation in usage of ICTs were lack of confidence in operating ICT facilities such as computers, CD Rom, problem of erratic power supply, lack of ICTs skills and inability to use, cost of ICTs and its tools and poor communication network in rural area. The study concludes that key areas where ICT can help improve this is by providing up-to-date information. In conclusion, if affordability and accessibility modern ICT facilities are not adequately built into the mainstream of Nigerian agricultural extension system, there is likely to be stagnation in the dissemination, utilization and application of scientific agricultural information for purposeful development of the system. A strong awareness drive on the part of government, research institution and other agencies on the advantages of using ICTs by agroforestry workers in the study area should be embarked upon to help

workers see the need and benefits to adopt and use ICTs so as to obtain agricultural information for growth and development.

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